COMBUSTION AND FLAME

THE JOURNAL OF THE COMBUSTION INSTITUTE

VOLUME 91 1992

Contents

JAMES D. FELSKE (Amherst, NY) and JERRY C. KU (Detroit, MI)
A Technique for Determining the Spectral Refractive Indices, Size, and Number Density of Soot Particles from Light Scattering and Spectral Extinction Measurements in Flames 1

JAMES A. MILLER and CARL F. MELIUS (Livermore, CA)
Kinetic and Thermodynamic Issues in the Formation of Aromatic Compounds in Flames of Aliphatic Fuels 21

E. MASTORAKOS, A. M. K. P. TAYLOR, and J. H. WHITELAW (London, U. K.)
Extinction and Temperature Characteristics of Turbulent Counterflow Diffusion Flames with Partial Premixing 40

E. MASTORAKOS, A. M. K. P. TAYLOR, and J. H. WHITELAW (London, U. K.)
Scalar Dissipation Rate at the Extinction of Turbulent Counterflow Nonpremixed Flames 55

S. P. FEDOTOV (Ekaterinburg, Russia)
Statistical Model of the Thermal Ignition of a Distributed System 65

J. M. SMEDLEY, A. WILLIAMS and K. D. BARTLE (Leeds, U. K.)
A Mechanism for the Formation of Soot Particles and Soot Deposits 71

SANJAY AGRAWAL and INDREK S. WICHMAN (East Lansing, MI)
Effect of Reaction Zone Temperature Profiles on the Pulsation Frequency of Flames Spreading Across a Ceiling in the Direction of the Prevailing Flow 83

M. E. BREWSTER (Boulder, CO)
Stationary Premixed Flames in a Dual-Source System 99

ALISON S. TOMLIN, MICHAEL J. PILLING, TAMÁS TURÁNYI, JOHN H. MERKIN, and JOHN BRINDLEY (Leeds, UK)
Mechanism Reduction for the Oscillatory Oxidation of Hydrogen: Sensitivity and Quasi-Steady-State Analyses 107

S. Y. HO (Salisbury, Australia)
Impact Ignition Mechanisms of Rocket Propellants 131

B. M. CETEGEN and D. S. PINES (Storrs, CT)
Combustion of a Stretched Carbon Monoxide Ligament with Radiative Heat Losses 143

K. ISHII, T. TSUKAMOTO, Y. UJIIE, and M. KONO (Tokyo, Japan)
Analysis of Ignition Mechanism of Combustible Mixtures by Composite Sparks 153

K. N. C. BRAY (Cambridge, UK), MICHEL CHAMPION (Poitiers, France), and PAUL A. LIBBY (La Jolla, CA)
Premixed Flames in Stagnating Turbulence Part III—The $\widetilde{k} - \widetilde{\epsilon}$ Theory for Reactants Impinging on a Wall 165

J. M. CARD and F. A. WILLIAMS (San Diego, CA)
Asymptotic Analysis with Reduced Chemistry for the Burning of *n*-Heptane Droplets 187

THEODORE A. STEINBERG, D. BRUCE WILSON, and FRANK BENZ (Las Cruces, NM)
The Combustion Phase of Burning Metals 200

Brief Communication

J. F. GRIFFITHS, D. J. ROSE (Leeds, UK), M. SCHREIBER, J. MEYER, and K. F. KNOCHE (Aachen, Germany)
Novel Features of End-Gas Autoignition Revealed by Computational Fluid Dynamics 209

J. L. MCGREEVY and M. MATALON (Evanston, IL)
Lewis Number Effect on the Propagation of Premixed Flames in Closed Tubes 213

D. A. SMITH and G. COX (Borehamwood, U.K.)
Major Chemical Species in Buoyant Turbulent Diffusion Flames 226

MOTOHIDE MURAYAMA and KIYOSHI UCHIDA (Nagakute, Japan)
Synthesis of Uniform Diamond Films by Flat Flame Combustion of Acetylene/Hydrogen/Oxygen Mixtures 239

G. BALAKRISHNAN, C. TREVIÑO (La Jolla, CA), and F. MAUSS (Aachen, Germany)
The Asymptotic Structure of Hydrogen-Air Diffusion Flames 246

S. HOCHGREB and F. L. DRYER (Princeton, NJ)
A Comprehensive Study on CH_2O Oxidation Kinetics 257

A. R. MASRI (Sydney, Australia), R. W. DIBBLE (Berkeley, CA), and R. S. BARLOW (Livermore, CA)
Chemical Kinetic Effects in Nonpremixed Flames of H_2/CO_2 Fuel 285

MING-SHIN WU and JAMES F. DRISCOLL (Ann Arbor, MI)
A Numerical Simulation of a Vortex Convected Through a Laminar Premixed Flame 310

T. S. CHENG, J. A. WEHRMEYER, and R. W. PITZ (Nashville, TN)
Simultaneous Temperature and Multispecies Measurement in a Lifted Hydrogen Diffusion Flame 323

T. ABBAS, P. COSTEN, and F. C. LOCKWOOD (London, UK)
The Influence of Near Burner Region Aerodynamics on the Formation and Emission of Nitrogen Oxides in a Pulverized Coal-Fired Furnace 346

H. J. MICHELS (London, UK) and F. RASHIDI (Ankara, Turkey)
Shock Temperature as a Criterion for the Detonability of LNG/LPG Constituents 364

F. RASHIDI (Ankara, Turkey) and H. J. MICHELS (London, England)
Marginal Dentonation of Aliphatic Natural Gas Constituents with O_2/N_2 373

B. YANG, K. SESHADRI (La Jolla, CA), and N. PETERS (Aachen, Germany)
The Asymptotic Structure of Premixed Methanol—Air Flames 382

P. C. HILLS, P. J. SAMSON (Wallsend, Australia), D. K. ZHANG, and T. F. WALL (Newcastle, Australia)
Laser Ignition of Combustible Gases by Radiative Heating of Small Particles 399

R. MINETTI, C. CORRE, M. RIBAUCOUR, and L. R. SOCHET (Lille, France)
Influence of N-Methylaniline on a Two-Stage Butane–Air Flame 413

Brief Communication

WEI BIAO FU, BAI LI ZHANG, and SHUANG MING ZHENG (Beijing, China)
Experimental Determination of the Equivalent Thermal Diffusivity for Porous Coal–Ash Particles 419

Author Index 423

Subject Index 429